

PU1004US2A(P314)

Claims:

1-5 (cancelled)

6. (Currently amended) A process for preparing a multi-functional polymer comprising the steps of:

preparing a multi-functional macroinitiator by reacting short-chain living polymer with a molar deficiency of a macroinitiator linking agent defined by the formula



where X is a leaving group, C* is a carbon atom susceptible to nucleophilic attack, and R¹ is an organic group that will impact the double bond in a manner that will allow the double bond to be anionically polymerized, where the short-chain living polymer is characterized by a length that is longer than 0.05 of the entanglement length and shorter than 1.5 of the entanglement length, ~~where at least one of the~~ said short-chain living polymer includes a functional group in addition to a living end, and where the functional group derives from synthesizing the short-chain living polymer with an initiator selected from the group consisting of trialkyltin lithium compounds, cyclic amino lithium compounds, and cyclic amino alkyl lithium compounds; and

polymerizing monomer with the multi-functional macroinitiator.

7. (Original) The process of claim 6, where the molar deficiency includes from about 0.55 to about 0.95 moles of macroinitiator linking agent per mole of short-chain living polymer.

8. (Original) The process of claim 6, where the macroinitiator linking agent is vinylbenzyl chloride.

9. (Cancelled)

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10. (Original) The process of claim 6, where the monomer is conjugated diene monomer.

11. (Original) The process of claim 10, where the monomer further includes styrene.

12-19 (Cancelled)

20. (Previously presented) The process of claim 6, where the short-chain living polymer is characterized by a length that is less than 1 of the entanglement length.

21. (Previously presented) The process of claim 6, where the short-chain living polymer is characterized by a length that is less than 0.7 of the entanglement length.

22. (Previously presented) The process of claim 6, where the short-chain living polymer is characterized by a length that is less than 0.5 of the entanglement length.

23. (Previously presented) The process of claim 6, where the short-chain living polymer includes a lithium counter cation.

24. (Previously presented) The process of claim 6, where the short-chain living polymer includes living polybutadiene.

25. (Previously presented) The process of claim 24, where the living polybutadiene has a number molecular weight of from about 100 to about 10,000 g/mol as determined by GPC.

26. (Previously presented) The process of claim 25, where the living polybutadiene has a number molecular weight of from about 200 to about 5,000 g/mol as determined by GPC.

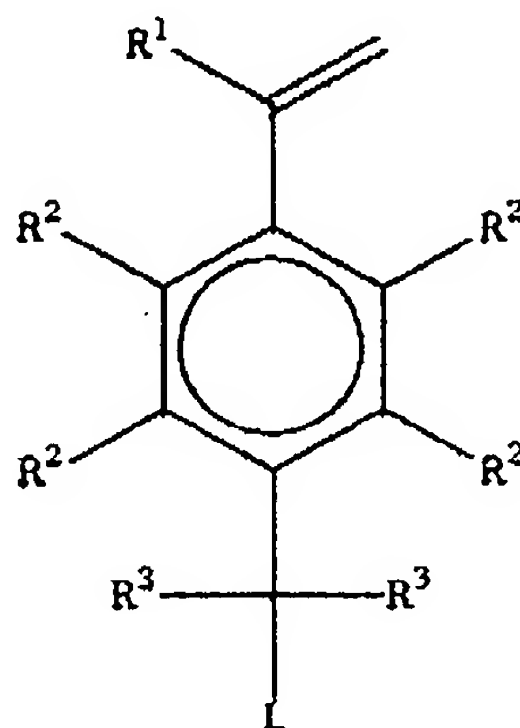
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27. (Previously presented) The process of claim 26, where the living polybutadiene has a number molecular weight of from about 500 to about 4,000 g/mol as determined by GPC.

28. (Previously presented) The process of claim 27, where the living polybutadiene has a number molecular weight of from about 1,000 to about 3,000 g/mol as determined by GPC.

29-30 (cancelled)

31. (Currently amended) The process of claim 6, where the macroinitiator linking agent is defined by the formula



where R¹, R², and R³, are hydrogen or organic groups, and L is a halogen atom, a sulfonate sulfonate, or a phenoxide.

32. (Previously presented) The process of claim 31, where R¹, R², and R³ are hydrogen or hydrocarbyl groups.

33. (Previously presented) The process of claim 6, where the macroinitiator linking agent is vinylbenzyl chloride, propenyl benzyl chloride, vinyl benzyl bromide, or propenyl dimethyl benzyl chloride.

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34. (Previously presented) The process of claim 7, where the molar deficiency includes from about 0.67 to about 0.95 moles of macroinitiator linking agent per mole of short-chain living polymer.

35. (Previously presented) The process of claim 34, where the molar deficiency includes from about 0.75 to about 0.93 moles of macroinitiator linking agent per mole of short-chain living polymer.

36. (Previously presented) The process of claim 6, where said step of polymerizing monomer with the multi-functional macroinitiator occurs within an organic solvent.

37. (Previously presented) The process of claim 36, where the organic solvent is an aliphatic solvent.